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EVALUATION OF WESTERN HEMLOCK LOOPER LARVAL POPULATIONS WITHIN THE BOUNDARIES OF THE 1963 CONTROL PROJECT IN SOUTHWEST WASHINGTON

by

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In 1963, 55,000 acres of western hemlock in southwest Washington were sprayed with insecticide in an attempt to control a serious outbreak of the western hemlock looper. Sevin was applied to 43,000 acres and DDT to 12,000 acres during the cooperative project administered by the State of Washington Department of Natural Resources. Technical assistance for the program was furnished by the U. S. Forest Service. Looper mortality in the DDT-treated areas was excellent. However, kill was variable and somewhat poor in the areas sprayed with Sevin.[1/] Following the State- and Federal-supported project, Weyerhaeuser Company and Crown Zellerbach Corporation treated 14,810 acres of heavily infested, relatively non-accessible timber with DDT. Included in this area were about 6,000 acres originally treated with Sevin. This land was resprayed after results with Sevin were deemed insufficient to prevent subsequent tree mortality.[2/]

In August 1964, control project mortality plots were visited and sampled to determine the density of looper populations a year following treatment. Although some of the plot trees had been logged after spraying, most plots were still intact. Trees were sampled using aluminum pole pruners as previously described.[3/]

1/ Buffam, P.E., 1964. Results of the entomological aspects of the 1963 western hemlock looper control project in southwest Washington, U.S. Forest Service, Region 6, 29 pp.

2/ Johnson, N.E., 1963. Mortality of hemlock looper larvae following spraying with DDT. Weyerhaeuser Company Forestry Research Note No. 55, 10 pp.

3/ Buffam, P.E., 1964. Op. Cit.

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RESULTS

In total, 20 five-tree plots were sampled. In 1963, the plot trees had been treated with either Sevin, DDT, Sevin and DDT, or a double spray of Sevin.

Generally, larval populations were less in 1964 than in 1963 (table 1). Larvae were more numerous in 1964 than after spraying in 1963 on three plots treated with Sevin--two with a single application and one with a double application. On plot 9B in the Sun Point area, larvae were especially plentiful. Here, loopers were dense enough after spraying in 1963 to cause tree defoliation and mortality. Light looper populations were found this year on plots sprayed with DDT and Sevin and DDT. Undoubtedly, predators, parasites and/or disease reduced populations that survived the insecticidal treatments.

Larval development in 1964 was slower than that in 1963. In August 1963, most of the larvae were in the fourth instar and very few second instars were found. This year, 19 percent were in the second, 45 percent in the third, 28 percent in the fourth and 8 percent in the fifth instars. Cooler temperatures in the late spring probably caused this difference.

Plots 9A and 9B were visited on October 13 and examined for looper eggs, pupae and moths. Only a few moths and no eggs or pupae were found. Evidently disease, parasites and/or predators have reduced numbers considerably. As a result, no appreciable defoliation occurred in 1964. However, some of the trees lightly to moderately defoliated for several successive years will probably succumb.

In southwest Washington, the looper will probably drop to subepidemic levels either in 1965 or 1966.

Table 1.--Results of pre- and post-spray western hemlock looper larval sampling in 1963 and follow-up check in 1964 on control project plots in southwest Washington

Treatment	Plot no.	1963 Larval count		1964 Larval count
		Pre-spray	Post-spray	
Sevin	3A	8	7	7
Sevin	7A	60	36	9
Sevin	9A	50	19	30
Sevin	9B	42	45	73
Sevin	20A	21	10	3
Sevin	20C	76	10	1
Sevin	21A	21	8	4
Sevin	23A	17	18	4
Sevin	33A	7	6	0
DDT	39A	47	1	0
Sevin and DDT 1/	7D	95	29	0
Sevin and DDT 1/	7E	169	78	9
Sevin and DDT 1/	7F	42	15	2
Sevin and DDT 1/	8A	52	38	4
Sevin and DDT 1/	11A	122	46	5
Sevin and DDT 1/	11B	254	178	9
Sevin and DDT 1/	11C	122	119	1
Sevin and DDT 1/	11D	291	249	5
Sevin double spray	13A	132	16	21
Sevin double spray	13C	347	10	3

1/ Counts were not made in 1963 after the plots were sprayed with DDT.